THE

NAUTICAL ALMANAC

AND

ASTRONOMICAL EPHEMERIS

FOR THE YEAR

1841.

PUBLISHED BY ORDER OF

THE LORDS COMMISSIONERS OF THE ADMIRALTY.

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1838.

PRICE FIVE SHILLINGS.

CONTENTS,

ALPHABETICALLY ARRANGED.

**** The large Roman Numerals indicate the Page of each Month; ...e small, the Page of the Preface; and the Arabic, the Page of the Book.*

ERRATA.

(*Continued from* page xv *of the Nautical Almanac for* 1840.)

I.—NAUTICAL ALMANAC FOR THE YEAR 1838.

age 437,	Sept. 4.	Declination.	*for*	7° 31′	*read*	S. 7° 31′
			—	3 47	—	S. 3 47
			—	3 56	—	S. 3 56

II.—NAUTICAL ALMANAC FOR THE YEAR 1840.

age 451, μ Geminorum. Diff. of R.A. Dec. 26 and 36. *for* 0 ·01 *read* 0 ·10

456, θ Ursæ Majoris. Declination. Dec. 36 *for* 40 ·1 *read* 41 ·1

Diff. of Declination. — 0 ·4 — 0 ·6

III.—NAUTICAL ALMANAC FOR THE YEAR 1841.

age 17, January 12, Jupiter. P.L. of diff. at XVIII^h *for* 2622 *read* 2722

— ——— 16, *for* Spica ♍ E. *read* Spica ♍ W.

EPHEMERIS

FOR THE YEAR

1841,

FOR THE MERIDIAN

OF THE

ROYAL OBSERVATORY AT GREENWICH.

CONFIGURATIONS OF THE SATELLITES OF JUPITE

At $18^h\ 45^m$, Mean Time.

Day of the Month.	West.		East.
1	·4 ·2	O	·1 ·3
2	·4 .1	O	·2 ·3
3	·4 2·	O	1· 3·
4	·2 ·1	O	·4
5	3·	O	1· ·2 ·4
6	·1 ● ·3	O	2· ·4
7	2· ·3 1·	O	·4
8	·2	O	·1 ·3 4·
9	1·	O	·2 ·3 4·
10		O	1· 3· 4·
11	.2 ·1	O	3· 4·
12	3· 4·	O	·2 1·
13	.3 4·	O	2·
14	4· ·3 2·	O	
15	4· ·2	O	·1 ·3
16	.4 1·	O	·2 ·3
17	·4	O	2· ·1 3·
18	·4 .2 ·1	O	3·
19	·2 ● ·4 3·	O	1·
20	.3 ·4 ·1	O	2·
21	·3 2·	O	·4
22	·2	O	·3 ·1 ·4
23	1·	O	·2 ·3 ·4
24		O	2· ·1 3· ·4
25	2· .1	O	3· 4·
26	·2 ● 3·	O	1· 4·
27	3· ·1	O	2· 4·
28	·3 2·	O	1· 4·
29	·1 ● ·2 4·	O	·3
30	4· 1·	O	·2 ·3
31	4·	O	·1 2· 3·

This Table represents, at $18^h\ 45^m$ after *Mean Noon* of each day of the month, the relative p of the images of Jupiter and his Satellites, as they would appear (disregarding their latit an inverting telescope. Jupiter is indicated by the white circles (O) in the centre of th the Satellites by points. The numerals 1, 2, 3, and 4, annexed to the points, serve to dis the Satellites from each other; and their positions are such as to indicate the directions of th lites' motions, which are in all cases to be considered as *towards the numerals.* When a Sat at its greatest elongation, the point is placed above or below the centre of the numeral. circle (O) at the left or right hand of the page, denotes that the Satellite placed by the side *on* the disc of Jupiter, and a black circle (●) that it is either *behind* the disc, or in the sha Jupiter.

MEAN TIME.

PHASES OF THE MOON.

	d	h	m
○ Full Moon	5	14	5·8
☾ *Last Quarter*	12	18	38·5
● New Moon	20	23	20·8
☽ *First Quarter*	28	8	3·0

	d	h
☾ Perigee	4	2
☾ Apogee	16	3

CONFIGURATIONS OF THE SATELLITES OF JUPIT

At 16ʰ 45ᵐ, Mean Time.

Day of the Month.	*West.*		*East.*
1	2·	○	1· 3· 4·
2	·1 ● ·2	○	3· 4·
3	3· 1·	○	4· ·2
4	3· 4·	○	·1 2·
5	4· ·3 2· 1·	○	
6	4· ·2	○	1·
7	4· ·1	○	·2 ·3
8	·4	○	1· 3·
9	·4 .2	○	3·
10	·4 3· 1·	○	·2
11	3· ·4	○	·1 2·
12	·3 • 2· 1·	○	·4
13	·3 ● ·2	○	1· ·4
14	·1	○	·2 ·3 ·4
15		○	2· 1· 3· ·
16	.2 ·1	○	3·
17	1· ○ 3·	○	·2 4·
18	3·	○	·1 2· 4·
19	·3 2· 1·	○	4·
20	·2 ·3 4	○	·1
21	4· .1	○	·3 ·2
22	4·	○	2· 1· 3·
23	4· 2· ·1	○	3·
24	4· 3·	○	1·
25	·4 3·	○	2·
26	·4 ·3 1· 2·	○	
27	·4 ·2 ·3	○	·1
28	1· ·4	○	·3 ·2
29		○	·4 2· 1· ·3
30	2· ·1	○	3· ·4
31	·2 ● 3	○	1· ·4

This Table represents, at 16ʰ 45ᵐ after *Mean Noon* of each day of the month, the relativ of the images of Jupiter and his Satellites, as they would appear (disregarding their latitu inverting telescope. Jupiter is indicated by the white circles (○) in the centre of the Satellites by points. The numerals 1, 2, 3, and 4, annexed to the points, serve to d the Satellites from each other; and their positions are such as to indicate the directions of lites' motions, which are in all cases to be considered as *towards the numerals.* When a at its greatest elongation, the point is placed above or below the centre of the numeral. circle (○) at the left or right hand of the page, denotes that the Satellite placed by the si *on* the disc of Jupiter, and a black circle (●) that it is either *behind* the disc, or in the Jupiter.

CONFIGURATIONS OF THE SATELLITES OF JUPIT

At $15^h\ 15^m$, Mean Time.

Day of the Month.	*West.*		*East.*
1	3· ·1	○	2·
2	1·○ .3	○	
3	·3 ·2	○	·1 4·
4	1·	○	·3 ·2 4·
5		○	·1 2· 4· ·3
6	2· .1 4·	○	3·
7	4· ·2	○	3·1·
8	4· 3· ·1	○	·2
9	4· .3	1 2 ○·	
10	.4 ·3 .2	○	·1
11	·4 1·	○	·3 ·2
12	·4	○	·1 2· ·3
13	·4 2· ·1	○	3·
14	·2 ·4	○	1· 3·
15	3· ·1	○	·4 ·2
16	3·	○	1· 2· ·4
17	·1 ● ·3 .2	○	·4
18	·3 ● 1·	○	·2
19		○	·1 2· ·3 4
20	1· 2·	○	3· 4·
21	·2	○	1· 3· 4·
22	3· ·1	○	4· ·2
23	3· 4·	○	1· 2·
24	4· ·3 2· ·1	○	
25	·2 ● 4·	○	
26	4·	○	·1 2· ·3
27	·4 1· 2·	○	3·
28	·4 ·2	○	·1 3·
29	·4 ·1 3·	○	·2
30	3· ·4	○	1· 2·

This Table represents, at $15^h\ 15^m$ after *Mean Noon* of each day of the month, the relativ of the images of Jupiter and his Satellites, as they would appear (disregarding their la an inverting telescope. Jupiter is indicated by the white circles (○) in the centre of the Satellites by points. The numerals 1, 2, 3, and 4, annexed to the points, serve to d the Satellites from each other; and their positions are such as to indicate the directions of lites' motions, which are in all cases to be considered as *towards the numerals.* When a S at its greatest elongation, the point is placed above or below the centre of the numeral. circle (○) at the left or right hand of the page, denotes that the Satellite placed by the sid on the disc of Jupiter, and a black circle (●) that it is either *behind* the disc, or in the s Jupiter.

CONFIGURATIONS OF THE SATELLITES OF JUPITE

THE SATELLITES OF JUPITER

are not visible this Month,

JUPITER being too near to the SUN.

ECLIPSES OF THE SATELLITES OF JUPITER.

THE ECLIPSES OF THE SATELLITES OF JUPITER

are not visible this Month,

JUPITER being too near to the SUN.

APPROXIMATE SIDEREAL TIMES

OF THE

OCCULTATIONS OF JUPITER'S SATELLITES BY JUPITER,

AND OF THE

TRANSITS OF THE SATELLITES AND THEIR SHADOWS OVER THE DISC OF THE PLANET.

THE SATELLITES OF JUPITER

are not visible this Month,

JUPITER being too near to the SUN.

EPHEMERIS

OF

THE PLANETS.

MAY, 1841.

At Transit over the Meridian of Greenwich.

Day of the Month.	*Apparent* Right Ascension.	Variation of Right Asc. in 1 Hour of Long.	Sid. Time of Sem. pass. Mer.	*Apparent* Declination.	Variation of Declination in 1 Hour of Long.	Semi-diameter.	Hor. Par.
	h m s	s	s	° ′ ″	″	″	″
1	1 14 13 ·58	+14 ·15	0 ·20	N. 4 56 12 ·2	+ 94 ·3	3 ·0	8 ·0
2	1 19 56 ·88	14 ·46	0 ·20	5 34 24 ·9	96 ·7	3 ·0	7 ·9
3	1 25 47 ·72	14 ·78	0 ·19	6 13 33 ·1	99 ·0	2 ·9	7 ·8
4	1 31 46 ·23	15 ·10	0 ·19	6 53 34 ·0	101 ·1	2 ·9	7 ·7
5	1 37 52 ·59	15 ·43	0 ·19	7 34 23 ·9	103 ·1	2 ·9	7 ·6
6	1 44 7 ·03	15 ·77	0 ·19	8 15 59 ·7	104 ·9	2 ·8	7 ·5
7	1 50 29 ·74	16 ·12	0 ·19	8 58 17 ·4	106 ·6	2 ·8	7 ·4
8	1 57 0 ·99	16 ·48	0 ·19	9 41 13 ·3	108 ·1	2 ·8	7 ·3
9	2 3 41 ·03	16 ·85	0 ·18	10 24 43 ·0	109 ·4	2 ·7	7 ·2
10	2 10 30 ·11	17 ·24	0 ·18	11 8 41 ·5	110 ·5	2 ·7	7 ·1
11	2 17 28 ·51	17 ·63	0 ·18	11 53 4 ·1	111 ·4	2 ·6	7 ·0
12	2 24 36 ·52	18 ·04	0 ·18	12 37 44 ·9	112 ·0	2 ·6	7 ·0
13	2 31 54 ·32	18 ·45	0 ·18	13 22 37 ·4	112 ·3	2 ·6	6 ·9
14	2 39 22 ·18	18 ·87	0 ·18	14 7 35 ·0	112 ·4	2 ·6	6 ·8
15	2 47 0 ·26	19 ·30	0 ·18	14 52 29 ·8	112 ·1	2 ·6	6 ·8
16	2 54 48 ·68	19 ·73	0 ·18	15 37 13 ·4	111 ·5	2 ·5	6 ·7
17	3 2 47 ·51	20 ·17	0 ·18	16 21 36 ·7	110 ·4	2 ·5	6 ·7
18	3 10 56 ·70	20 ·60	0 ·18	17 5 29 ·6	108 ·9	2 ·5	6 ·6
19	3 19 16 ·12	21 ·02	0 ·18	17 48 41 ·5	107 ·0	2 ·5	6 ·6
20	3 27 45 ·53	21 ·43	0 ·18	18 31 0 ·7	104 ·6	2 ·5	6 ·5
21	3 36 24 ·50	21 ·82	0 ·18	19 12 15 ·4	101 ·6	2 ·5	6 ·5
22	3 45 12 ·49	22 ·18	0 ·18	19 52 13 ·1	98 ·1	2 ·5	6 ·5
23	3 54 8 ·76	22 ·51	0 ·18	20 30 41 ·1	94 ·1	2 ·5	6 ·5
24	4 3 12 ·46	22 ·79	0 ·18	21 7 26 ·6	89 ·6	2 ·5	6 ·5
25	4 12 22 ·53	23 ·04	0 ·18	21 42 17 ·8	84 ·6	2 ·5	6 ·5
26	* * *	*	*	* * *	*	*	*
27	4 21 37 ·83	23 ·23	0 ·18	22 15 2 ·7	79 ·1	2 ·5	6 ·5
28	4 30 57 ·04	23 ·36	0 ·18	22 45 31 ·1	73 ·2	2 ·5	6 ·5
29	4 40 18 ·76	23 ·44	0 ·18	23 13 33 ·6	67 ·0	2 ·5	6 ·5
30	4 49 41 ·57			23 39 2 ·4	60 ·4	2 ·5	6 ·6
31	4 59 3 ·96			1 51 ·5	53 ·6	2 ·5	6 ·6
32	5 8 24 ·53			·2	+ 46 ·7	2 ·5	6 ·7

FORMULÆ OF REDUCTION,

ACCORDING TO PROFESSOR BESSEL.

1.—*Adopting the Notation and Coefficients employed by Mr. Baily, in his Introduction to the New Tables of the Astronomical Society of London.*

$$A = -18''\cdot6768 \cos \odot$$

$$B = -20''\cdot3600 \sin \odot$$

$$C = t - 0\cdot02495 \sin 2\odot - 0\cdot34362 \sin \Omega + 0\cdot00413 \sin 2\Omega - 0\cdot004 \sin 2\text{☾}$$

$$D = -0''\cdot54470 \cos 2\odot - 9''\cdot25000 \cos \Omega + 0''\cdot09030 \cos 2\Omega - 0''\cdot090 \cos 2\text{☾}$$

$$a = \cos \alpha \sec \delta$$

$$b = \sin \alpha \sec \delta$$

$$c = 46''\cdot0206 + 20''\cdot0426 \sin \alpha \tan \delta$$

$$d = \cos \alpha \tan \delta$$

$$a' = \tan \omega \cos \delta - \sin \alpha \sin \delta$$

$$b' = \cos \alpha \sin \delta$$

$$c' = 20''\cdot0426 \cos \alpha$$

$$d' = -\sin \alpha$$

Δc = the annual proper motion in Right Ascension, *in arc*.

$\Delta c'$ = the annual proper motion in Declination.

Where t denotes the time from the beginning of the year, expressed in fractional parts of a year, $\odot$ the Sun's and ☾ the Moon's true longitude, Ω the mean longitude of the Moon's node, and ω the obliquity of the Ecliptic, each for the time t: α the mean Right Ascension, *in arc*, and δ the mean Declination for the beginning of the year. Then, for the time represented by t,

Apparent R.A., *in arc*, $= \alpha + Aa + Bb + Cc + Dd + t\Delta c$.

Apparent Dec. - - - $= \delta + Aa' + Bb' + Cc' + Dd' + t\Delta c'$.

2.—*Using the same Notation and Coefficients, and assuming*

$$46''\cdot0206\, C = f \qquad B = h \cos H$$

$$20\cdot0426\, C = g \cos G \qquad A = h \sin H$$

$$D = g \sin G \qquad A \tan \omega = i$$

Apparent R.A., *in arc*, $= \alpha + f + t\Delta c$
$+ g \sin (G + \alpha) \tan \delta + h \sin (H + \alpha) \sec \delta$

Apparent Dec. - - - $= \delta + i \cos \delta + t\Delta c'$
$+ g \cos (G + \alpha) + h \cos (H + \alpha) \sin \delta$

OCCULTATIONS OF PLANETS AND FIXED STARS BY THE MOON,

VISIBLE AT GREENWICH.

Day of the Month.	Star's Name.	Magnitude.	Immersion. Sidereal Time.	Immersion. Mean Time.	Immersion. Angle from N. Point.	Immersion. Angle from Vertex.	Emersion. Sidereal Time.	Emersion. Mean Time.	Emersion. Angle from N. Point.	Emersion. Angle from Vertex.
			h m	h m	°	°	h m	h m	°	°
Oct. 31	η Tauri - - -	3	20 53†	6 14	196	158				
31	f Pleiadum- -	5	21 8	6 29	140	101	21 52	7 13	254	213
31	h Pleiadum- -	5.6	21 19	6 39	164	124	21 47	7 7	230	189
Nov. 2	139 Tauri - - -	5.6	23 5	8 18	145	107	23 38	8 51	223	181
3	ω^1 Geminorum -	6	0 12†	9 20	177	138				
17	χ^2 Sagittarii - -	6	22 12	6 26	121	147	23 21‡	7 35	283	316
25	101 Piscium - -	6	22 44	6 26	115	82	23 55	7 36	308	287
27	b Pleiadum- -	4.5	8 17	15 49	119	162	9 11	16 43	252	294
27	g Pleiadum- -	5.6	8 44†	16 16	185	228				
27	d Pleiadum- -	5	8 52	16 24	76	119	9 45	17 17	293	334
27	c Pleiadum- -	5	9 10†	16 42	185	227				
27	η Tauri - - -	3	9 20	16 53	106	147	10 13	17 46	263	302
27	f Pleiadum- -	5	9 59	17 31	89	129	10 51	18 23	279	316
27	h Pleiadum- -	5.6	10 0	17 32	107	147	10 51	18 23	262	298
29	125 Tauri - - -	6	2 4	9 29	67	25	3 3	10 28	302	265
29	139 Tauri - - -	5.6	10 59†	18 23	170	213				
Dec. 2	σ^2 Cancri - - -	6	8 33	15 46	9	5	9 17	16 29	295	303
18	ρ Aquarii - -	6	2 57	9 8	130	166	3 59‡	10 9	289	327
20	λ Piscium - -	5	23 38	5 42	64	65	0 16	6 19	8	16
21	45 Piscium - -	6	0 10†	6 9	215	214				
24	ε Arietis - - -	5	0 36†	6 24	24	351				
29	θ Cancri - - -	5.6	7 48	13 15	80	70	8 56	14 23	230	239
31	z Leonis - - -	6	6 45	12 4	66	32	7 51	13 10	235	209

† A near approach.

‡ Star below the horizon.

ECLIPSES OF THE SUN AND MOON.

In the Year 1841 there will be four Eclipses of the Sun and two of the Moon.

I.—*A Partial Eclipse of the SUN, Jan.* 22, 1841, *invisible at Greenwich.*

Begins on the Earth generally at $4^h\ 55^m{\cdot}1$, Mean Time at Greenwich,
in Longitude 82° 7′ E. of Greenwich, and Latitude 68° 19′ S.

Greatest Eclipse at $5^h\ 23^m{\cdot}9$. Mag. (Sun's diam. = 1) 0·032,
in Longitude 56° 49′ E. of Greenwich, and Latitude 63° 20′ S.

Ends on the Earth generally at $5^h\ 52^m{\cdot}8$,
in Longitude 37° 31′ E. of Greenwich, and Latitude 56° 46′ S.

This Eclipse will only be visible in a small portion of the Southern Ocean.

II.—*A total Eclipse of the MOON, Feb.* 5, 1841, *visible at Greenwich.*

	h	m	
First contact with Penumbra - - - -	11	24·0	Mean Time at Greenwich.
First contact with dark Shadow - - -	12	20·3	
First total Immersion in dark Shadow	13	17·7	
Middle of Eclipse - - - - - - - - - -	14	6·5	
Last total Immersion in dark Shadow	14	55·3	
Last contact with dark Shadow - - -	15	52·7	
Last contact with Penumbra - - - -	16	49·0	

Magnitude of the Eclipse (Moon's diameter = 1) 1·719, on the Southern limb.

At these times respectively the Moon will be in the Zenith of the places whose positions are,

	°	′			°	′
Longitude	11	8 E.	of Greenwich.	Latitude	16	32 N.
	2	25 W.			16	18
	16	15			16	4
	27	59			15	52
	39	44			15	40
	53	33			15	26
	67	7 W.			15	12 N.

from North Pole of { first contact with Shadow 118°, towards the East.
last contact with Shadow 71°, towards the West.

ELEMENTS OF THE ECLIPSES OF THE MOON.

1841.	February 5, at 14h Mean Time at Greenwich.	August 1, at 22h Mean T at Greenwicl
	h m s	h m s
☽'s Right Ascension	9 18 27 ·05	20 49 5
☉'s Right Ascension	9 18 33 ·38	20 49 14
	° ′ ″	° ′ ″
☽'s Declination	N. 15 47 55 ·1	S. 17 43 31
☉'s Declination	S. 15 41 57 ·0	N. 17 47 40
☽'s Horary Motion in R. A.	35 37 ·8	29 8
☉'s Horary Motion in R. A.	2 30 ·3	2 25
☽'s Horary Motion in Declination	S. 14 30 ·9	N. 10 33
☉'s Horary Motion in Declination	N. 0 46 ·1	S. 0 38
☽'s Equatorial Horizontal Parallax	1 0 35 ·2	53 59
☉'s Equatorial Horizontal Parallax	8 ·7	8
☽'s True Semidiameter	16 30 ·6	14 42
☉'s True Semidiameter	16 14 ·1	15 47

EPHEMERIS OF THE STARS PROPER TO BE OBSERVED WITH MARS, NEAR THE OPPOSITION OF THE PLANET,

APRIL 17, 1841.

Date.	Star.	Magnitude.	*Apparent* Right Ascension.	*Apparent* Declination.
1841.			h m s	° ′ ″
May 22	θ Virginis -	4.5	13 1 46·34	S. 4 41 34·8
23	θ Virginis -	4.5	13 1 46·33	4 41 34·7
24	θ Virginis -	4.5	13 1 46·33	4 41 34·6
25	θ Virginis -	4.5	13 1 46·32	4 41 34·6
26	θ Virginis -	4.5	13 1 46·32	4 41 34·5
27	θ Virginis -	4.5	13 1 46·31	4 41 34·5
28	θ Virginis -	4.5	13 1 46·31	4 41 34·5
	* - - - (s)	8	13 7 15·78	7 13 10·4
29	θ Virginis -	4.5	13 1 46·30	4 41 34·4
	* - - - (s)	8	13 7 15·77	7 13 10·4
30	θ Virginis -	4.5	13 1 46·30	4 41 34·4
	* - - - (s)	8	13 7 15·77	7 13 10·3
31	θ Virginis -	4.5	13 1 46·29	4 41 34·3
	* - - - (s)	8	13 7 15·76	7 13 10·2
June 1	θ Virginis -	4.5	13 1 46·28	4 41 34·3
	* - - - (s)	8	13 7 15·76	S. 7 13 10·2

LATITUDES AND LONGITUDES OF THE PRINCIPAL OBSERVATORIES.

MSKIRK - - - - -	(Rev. W. R. Dawes.) Lat. + 53° 34′ 18″ Long. + $0^h\ 11^m\ 36^s$	*Mem. Ast. Soc.* vol. v. page 370.
FORD - - - - -	Lat. + 51° 45′ 40″ Long. + $0^h\ 5^m\ 1^s{\cdot}5$	*Requisite Tables*, 3rd edit. (from Trig. Survey.)
DUA - - - - - -	Lat. + 45° 24′ 2″ Long. — $0^h\ 47^m\ 29^s{\cdot}2$	*Ast. Nach.* vol. v. page 411. *Ast. Nach.* vol. iv. page 347.
LERMO - - - - -	Lat. + 38° 6′ 44″ Long. — $0^h\ 53^m\ 25^s{\cdot}6$	*Cacciatore*, in Books 7 and 8 of *Palermo Observations.* Communicated by M. Cacciatore to Captain B. Hall, R.N.
RAMATTA - - - -	Lat. — 33° 48′ 49″·8 Long. — $10^h\ 4^m\ 6^s{\cdot}25$	*Phil. Trans.* for 1829. Part iii. pages 16 and 29.
RIS - - - - - -	Lat. + 48° 50′ 13″ Long. — $0^h\ 9^m\ 21^s{\cdot}5$	*Conn. des Tems* for 1835, page 356. *Phil. Trans.* for 1827. (*Henderson on the Longitudes of Greenwich and Paris.*)
TERSBURGH - - -	Lat. + 59° 56′ 31″ Long. — $2^h\ 1^m\ 15^s{\cdot}8$	*Conn. des Tems* for 1836, page 340. *Ast. Nach.* vol. viii. page 360.
RTSMOUTH - - -	Lat. + 50° 48′ 3″ Long. + $0^h\ 4^m\ 23^s{\cdot}9$	*Requisite Tables*, 3rd edit. (from Trig. Survey.)
AGUE - - - - -	Lat. + 50° 5′ 18″·5 Long. — $0^h\ 57^m\ 41^s{\cdot}9$	*Ast. Nach.* vol. viii. page 198. *Ast. Nach.* vol. iii. page 264.
ME - - - - - -	(Roman College.) Lat. + 41° 53′ 52″ Long. — $0^h\ 49^m\ 54^s{\cdot}7$	*Conn. des Tems* for 1822, page 312. *Ast. Nach.* vol. viii. page 88.
FERNANDO, near CADIZ - - -	Lat. + 36° 27′ 45″ or 42″ Long. + $0^h\ 24^m\ 49^s{\cdot}1$	*Zach's Correspondance Astronomique*, vol. xiv. pages 240 to 243. *Ast. Nach.* vol. ix. page 358.
HELENA - - - -	Lat. — 15° 55′ 26″ Long. + $0^h\ 22^m\ 50^s$	Communicated by Lieut. Johnson.
[illegible]	(Sir J. F. W. Herschel.) + 51° 30′ 20″ + $0^h\ 2^m\ 24^s$	*Baily's Astron. Tables and Formulæ*, p.124. (London, 1827.)
[illegible]	Pearson.) 25′ 51″ $26^s{\cdot}0$	*Pearson's Astronomy*, vol. ii. page 707.

LATITUDES AND LONGITUDES OF THE PRINCIPAL OBSERVATORIES.

SPEYER - - - - -	Lat. + 49° 18′ 55″·2	*Schwerd's Observations.* page xx.
	Long. — 0h 33m 46s ·5	*Ast. Nach.* vol. iii. page 4(
STRASBURGH - - - -	Lat. + 48° 34′ 40″	*Comptes Rendus Hebdom*
	Long. — 0h 31m 0s·8	*des Séances de L'Acadén* *Sciences.* 2nd Semestre. 1836, pag
TURIN - - - - -	(New Observatory.)	
	Lat. + 45° 4′ 6″	Communicated by M. Pl
	Long. — 0h 30m 48s ·4	Captain B. Hall, R.N.
VERONA - - - - -	(Lyceum.)	
	Lat. + 45° 26′	(Approximate.)
	Long. — 0h 44m 0s ·1	*Effem. Astron. di Milano fo* page 60.
VIENNA - - - - -	Lat. + 48° 12′ 35″	*Littrow's Astron. Obser* Part viii. page 124.
	Long. — 1h 5m 31s ·9	*Ast. Nach.* vol. iii. page 6
VIVIERS - - - - -	(M. Flaugergues.)	
	Lat. + 44° 29′ 11″	*Zach's Correspondance A mique,* vol. ii. page 138.
	Long. — 0h 18m 44s ·8	*Ast. Nach.* vol. v. page 25
WILNA - - - - -	Lat. + 54° 41′ 0″	*Ast. Nach.* vol. iv. page 56
	Long. — 1h 41m 11s ·9	*Ast. Nach.* vol. viii. page 9

3. With the approximate interval and this difference, as arguments, take out the correction from the table.

4. If the Proportional Logarithms are *decreasing*, *add* the correction to the approximate time; but if *increasing*, *subtract* it: the result will be the accurate Greenwich mean time.

Example I.—Suppose it were required to find the Greenwich Mean Time, at which the *reduced* distance between the Moon and α Pegasi would be 39° 5′ 12″ on January 1, 1841. It appears, by inspecting the distances, that the time must be between XVIII^h and XXI^h: the *nearest* distance *preceding*, in order of time, the given distance is therefore the

	° ′ ″			
Distance at XVIII^h -	38 30 53	and	P. L. - -	2920
Reduced Distance -	39 5 12			
Difference - - - -	0 34 19	- -	P. L. - -	7198
Approximate Interval -	1^h 7^m 13^s	- -	P. L. - -	4278

The difference between the Proportional Logarithms in the Ephemeris, at XVIII^h and XXI^h, is 52. Opposite to 1^h 7^m (or the quantity nearest to it, 1^h 10^m), and under 52, in the Table, we have for the correction 15^s, which, *added* to the Approximate Interval, 1^h 7^m 13^s, because the Proportional Logarithms are *decreasing*, gives 1^h 7^m 28^s, for the true interval from XVIII^h: and hence the Greenwich Mean Time is 19^h 7^m 28^s.

We see that, in the preceding Example, the omission of this correction would only produce an error of 3¾′ in the Longitude. Cases may however occur, in which it would be greater.

It will sometimes happen, that the difference of the Proportional Logarithms will exceed 138, the limit of the Table of Correction; in this case the Table may be entered with the Approximate Interval, and *one-half or any fraction* of the difference of the Proportional Logarithms and the corresponding correction *increased in like proportion.*

Example II.—Suppose it were required to find the Greenwich Mean Time, at which the *reduced* distance between the Moon and Aldebaran would be 18° 29′ 16″ on July 13th, 1841. By inspecting the distances, it appears that the time must be between XVIII^h and XXI^h; therefore take the

	° ′ ″			
Distance at XVIII^h -	19 13 46	and	P. L. - -	3143
Reduced Distance -	18 29 16			
Difference - -	0 44 30	- -	P. L. - -	6069
Approximate Interval -	1^h 31^m 46^s	- -	P. L. - -	2926

The difference between the Proportional Logarithms in the Ephemeris, at XVIII^h and XXI^h, is 150, one-half of which is 75; under this number in the Table, and opposite that nearest the Approximate Interval, is 23½^s: the correction is therefore 47^s to be *subtracted* from the Approximate Interval, because the Proportional Logarithms are *increasing*; the time at Greenwich is therefore 19^h 30^m 59^s.

menon is visible at Greenwich, the limits of visibility being the same as those adopted for the eclipses.

In the month of July, 1841, under the general heading "Occultations," opposite to Satellite I, and under Immersion, the first quantity recorded is $2^d\ 22^h\ 12^m$, which signifies that at $22^h\ 12^m$ sidereal time on July the 2nd an Immersion of the 1st Satellite takes place, but that it is invisible at Greenwich. Under Emersion we find, for the whole of the month, "In the shadow," which signifies that the Emersion of the Satellite cannot be seen, because, although it ceases to be occulted by the body of the Planet, it is still involved in its shadow, from which it does not indeed escape until $1^h\ 2^m\ 18^s{\cdot}0$ sidereal time. (See Eclipses of the Satellites of Jupiter on the preceding page of the month.) Again, in the column of Occultations opposite to Satellite III, it appears that the 3rd Satellite is occulted on the 13th day of the month; that it disappears behind the disc of the Planet at $14^h\ 25^m$, reappears at $17^h\ 6^m$, Sidereal time; but that the Emersion only, is visible at Greenwich.

In the column headed Transits of Satellites, the first transit of Satellite I. at Greenwich appears to be on the 1st day, when the Ingress takes place at $0^h\ 50^m$, and the egress at $3^h\ 4^m$, Sidereal time; that is, it comes in contact with Jupiter's disc at $0^h\ 50^m$, remains *on* the disc $2^h\ 14^m$, and quits it again at $3^h\ 4^m$, sidereal time; both ingress and egress are invisible at Greenwich.

The Transits of Shadows are to be interpreted in a similar manner.

Page XXII. of each Month.

1. *Logarithms of* A, B, C, D, *for correcting the Places of the Fixed Stars.*

In the formulæ which express the relation of the apparent place of a Star to its mean place, and reciprocally, there are certain factors which are independent altogether of the Star's place, and are therefore common to all Stars. These factors depend upon the longitudes of the Sun, Moon, and Moon's ascending Node.

The Logarithms here given are the logarithms of these independent factors, conveniently arranged for incorporation with other terms depending upon each particular Star, according to the method recommended by Professor Bessel. They have been computed for Mean Midnight at Greenwich, according to the formulæ exhibited at page 435, omitting in C and D the terms depending on 2 ☾.

In the form under which they now appear, they are chiefly used in conjunction with the Astronomical Society's Tables,* which contain the Logarithms of the remaining factors depending on the Star's place; and for the reduction of any Star in that Catalogue, they appear to afford every facility that can be desired.

Where, however, the apparent place of any Star, *not in the Astronomical Society's Catalogue*, is required, similar quantities to those must either be computed with reference to the particular Star, before we can use the A, B, C, D, or recourse must be had to other and independent means; such, for instance, as are afforded by the Table at pages 436 and 437, which serves equally for all Stars. The formulæ by which this Table has been constructed are given at page 435.

The following Examples will sufficiently illustrate the mode of using both Tables.

* "New Tables for facilitating the Computation of Precession, Aberration, and Nutation of 2881 Principal Fixed Stars, together with a Catalogue of the same, reduced to January 1, 1830. Computed at the Expense and under the Direction of the Astronomical Society of London. To which is prefixed an Introduction, explanatory of their Construction and Application. By Francis Baily, Esq." London, 1827. 4to.

Required the Correction ($\Delta\,\alpha$) of the Right Ascension and ($\Delta\,\delta$) of the Declination of γ Orionis (No. 648, *Ast. Soc. Cat.*), for Precession, Aberration, and Nutation, at Greenwich Mean Midnight, on February 5, 1841.

1.—By the Astronomical Society's Constants and the Logarithms of A, B, C, D.

	h m s		° ′ ″
Mean α, Jan. 1, 1830 - -	5 16 1·00	Mean δ - - - - - -	+ 6 11 17·10
Eleven Years Precession -	+ 35·31	Eleven Years Precession	+ 42·05
Mean α, Jan. 1, 1841 - -	5 16 36·31	Mean δ - - - - - -	+ 6 11 59·15

	Logarithms.	Nat. Nos.		Logarithms.	Nat. Nos.
a - - - -	+ 8·1069		a' - - - -	+ 9·5119	
A - - - -	− 1·1361		A - - - -	− 1·1361	
aA - - -	− 9·2430	− 0^s·175	a'A - - -	− 0·6480	− 4″·446
b - - - -	+ 8·8184		b' - - -	+ 8·3130	
B - - - -	+ 1·1417		B - - - -	+ 1·1417	
bB - -	+ 9·9601	+ 0·912	b'B - -	+ 9·4547	+ 0·285
c - - - -	+ 0·5065		c' - - -	+ 0·5824	
C - - - -	+ 9·5395		C - - - -	+ 9·5395	
cC - -	+ 0·0460	+ 1·112	c'C - -	+ 0·1219	+ 1·324
d - - - -	+ 7·1395		d' - - -	− 9·9920	
D - - - -	− 0·8414		D - - - -	− 0 8414	
dD - -	− 7·9809	− 0·010	d'D - -	+ 0·8334	+ 6·814
		$\Delta\,\alpha$ = + 1·839			$\Delta\,\delta$ = + 3·977

2.—By the independent Constants.

For February 5, 1841, the Table at pages 436, 437, furnishes

$f = +\,15''{\cdot}94$; $g = +\,9''{\cdot}82$; $G = 315^\circ\,0'$; $h = +\,19''{\cdot}47$; $H = 315^\circ\,22'$; $i = -\,5''{\cdot}94$.

α (*in time*) converted	= 79 9 - - - - - - - - - -	79 9
	$G+\alpha$ = 34 9	$H+\alpha$ = 34 31

	Logarithms.	Nat. Nos.		Logarithms.	Nat. Nos.
f - - - - - - - - -		+ 15″·94			
g - -	+ 0·9921			+ 0·9921	
sin ($G+\alpha$)	+ 9·7492		cos - -	+ 9·9178	
tan δ - -	+ 9·0360				
				+ 0·9099	+ 8″·13
	+ 9·7773	+ 0·60			
h - -	+ 1·2894			+ 1·2894	
sin ($H+\alpha$)	+ 9·7533		cos - -	+ 9·9159	
sec δ - -	+ 0·0025		sin - -	+ 9·0334	
	+ 1·0452	+ 11·10		+ 0·2387	+ 1·73
	$\Delta\,\alpha$ (*in arc*) =	+ 27·64			
			i - - -	− 0·7738	
	$\Delta\,\alpha$ (*in time*) =	+ 1^s·84	cos δ -	+ 9·9975	
				− 0·7713	− 5·91
				$\Delta\,\delta$ =	+ 3·95

Hence the App. Right Ascens. of γ Orionis = 5^h 16^m 36^s·31 + 1^s·84 = 5^h 16^m 38^s·15

And the Apparent Declination - - - - = + 6° 11′ 59″·15 + 3″·95 = + 6° 12′ 3″·10

however, the Obliquity corresponding to the date in the Table nearest to the given date is sufficient, as is evident from an inspection of the quantities.

Sun's Horizontal Parallax. (Page 266.)

The Sun's Horizontal Parallax is the *greatest* angle under which the equatorial semidiameter of the earth would appear at the Sun's centre. It varies inversely as the distance, and the numbers in this column show the values for every tenth day of the year.

The Parallax serves for reducing a Solar observation made at the surface of the earth to what it would have been if made at the centre.

Sun's Aberration. (Page 266.)

The progressive motion of light, combined with the motion of the Earth in its orbit, causes the Sun to appear in a different position from that which he really occupies, the true position being always in advance of the apparent. The numbers in this column indicate, for every 10th day of the year, the amount of Aberration, or the quantity to be applied to the *true* longitude of the Sun to obtain the *apparent* longitude. The longitudes derived from the Solar Tables include Aberration, and are therefore *apparent* longitudes, such as are contained in this Ephemeris. If the *true* longitude of the Sun be wanted, as is the case in finding the longitude of the Earth for the calculation of the Geocentric place of a body, the aberration must be applied with a contrary sign. Thus, on June 10, 1841, at Mean Noon, by *adding* $20''{\cdot}05$, the amount of aberration, to $79^\circ\ 21'\ 23''{\cdot}0$, the apparent longitude of the Sun, we obtain $79^\circ\ 21'\ 43''{\cdot}05$ for the true longitude.

Equation of the Equinoxes. (Page 266.)

The Solar and Planetary Tables furnish us with the places of the Heavenly Bodies referred to the Mean Equinox; but the true place of the Equinox at any time differs from its mean place, by a quantity which is termed the Equation of the Equinoxes; and the numbers here given show the value of the Equation for every 10th day of the year. They are to be applied, with their proper signs, to the Longitudes reckoned from the Mean Equinox, to obtain the values with respect to the True Equinox.

If the Longitude of a body be given with reference to the true Equinox, as in this Ephemeris, and it be required to find its Longitude reckoned from the Mean Equinox, the Equation of the Equinoxes must be applied with a contrary sign. Thus, the longitude of the Sun, reckoned from the true Equinox, on July 20, 1841, at Mean Noon, is $117^\circ\ 30'\ 48''{\cdot}2$, and the Equation of the Equinoxes is $+\ 14''{\cdot}15$; therefore, applying it with the contrary sign, the difference $117^\circ\ 30'\ 34''{\cdot}05$ is the Sun's Longitude from the *Mean* Equinox on that day.

The Equation corresponding to any date not contained in the Table, may be obtained in the usual way by interpolation.

The Equation of the Equinoxes in Right Ascension, in a similar manner, enables us to find the *apparent* point of intersection of the Ecliptic *on the Equator*; and is necessary in computing Sidereal Time.

position which ought to be shown by perfect instruments at the time of the Star's transit over the meridian of Greenwich; and, therefore, supposing the catalogue of mean places to be correct, they serve to detect any errors of the instruments.

The hours and minutes of Right Ascension, and the degrees and minutes of Declination, are placed at the heads of the columns as constants, and belong equally to all the numbers below them. This arrangement has rendered it necessary, in numerous instances, to continue the seconds beyond 60, as the width of the page would not permit of otherwise indicating any change in the minutes. Thus, the apparent Right Ascension of 51 (Hev.) Cephei, at page 452, on December 17, 1841, is registered $6^h\ 23^m\ 123^s{\cdot}15$, and is to be read $6^h\ 25^m\ 3^s{\cdot}15$. Again, the Declination of α Coronæ Borealis (page 463), on July 20, is registered N. 27° 14′ 70″·0, which signifies N. 27° 15′ 10″·0.

The small figures on the right hand of the vertical columns of seconds represent the differences of the quantities above and below them on the left, or the variation of Right Ascension and Declination in 10 days, and serve to find, by interpolation, the values for any intermediate day. As in the case of the Planets before explained, a Star will sometimes arrive at the meridian twice in one Mean Solar day. Wherever this occurs, an asterisk is placed opposite to the interval, and it signifies that the Star has passed the meridian 11 times in the 10 Mean Solar days, and consequently that the Right Ascension or Declination on any intermediate day is to be determined in these particular instances by taking $\frac{1}{11}$th part, instead of $\frac{1}{10}$th, for the daily variation in the interval. Thus, at page 450, we find in the instance of ϵ Orionis, an asterisk opposite the interval between June 10 and 20, and a difference of $0^s{\cdot}13$ opposite to the interval between the seconds belonging to those dates; we therefore infer that 11 transits have taken place, and that the daily variation of the Right Ascension is $0^s{\cdot}012$.

When extreme accuracy is required, the apparent places of the 5 Polar Stars demand a further correction, depending on the terms which involve 2 ☾. The apparent places do not include these corrections, on account of the rapid variation of the argument, viz. about 26° in a day, but they are given in a Table at pages 478, 479, for every degree of the Moon's Longitude, and may be readily applied, agreeably to the precept at the foot of that Table.

Formulæ for correcting for *daily* aberration are given in the Preface.

Moon-Culminating Stars. (Pages 480 to 520.)

Those Stars are denominated Moon-Culminating Stars, which being near the Moon's parallel of Declination, and not differing much from her in Right Ascension, are proper to be observed with the Moon, in order to determine differences of meridians. This is effected by comparing the differences of the observed Right Ascensions of such a Star and the Moon's bright limb at any two meridians. If the Moon had no motion, the difference of her Right Ascension from that of the Star would be constant at all meridians; but in the interval of her transit over two different meridians, her Right Ascension will have varied, and the difference between the two compared differences will exhibit the amount of this variation, which added to the difference of the meridians shows the angle through which the westerly meridian must revolve before it comes up with the Moon; hence, and knowing the rate of her increase in Right Ascension, the difference of longitude may be easily obtained.

For the determination of this variation, recourse has hitherto been had to actual observations made at diff[illegible] ... use any errors in the computed places

Greenwich, takes in passing the meridian, and therefore serve to determine the Transit of the centre from an observed Transit of either limb.

Occultations. (Pages 521 to 523.)

These pages contain a list of the Planets and Fixed Stars to the sixth magnitude inclusive, the Occultations of which by the Moon will happen when the objects are above the horizon of Greenwich, together with the Sidereal and Mean Times of the Immersions and Emersions, and the points on the circumference of the Moon's image, where the Star, viewed with a telescope that inverts, will disappear and reappear. By "Angle from N. Point" is to be understood the arc included between the Star, when in contact, and the point of intersection of the limb with a circle passing through the North Pole and the centre of the Moon's image; and by "Angle from Vertex," the arc between the Star at contact and the point where a circle, passing through the zenith and the Moon's centre, intersects the limb; the angles in all cases being reckoned towards the right hand round the circumference of the Moon's image, as seen in an inverting telescope. These latter angles will be found very useful in observing Occultations of small stars with a telescope not mounted equatorially; and, for the observation of an Emersion, a knowledge of the angle is absolutely necessary to enable the observer to direct his attention to the point of the Moon's limb where the Star will reappear. In some instances, Occultations have been inserted which taking place in, or near to, the horizon of Greenwich, are not visible there, but may be visible at places not far distant from Greenwich.

Elements for facilitating the Computation of Occultations of certain Stars by the Moon. (Pages 524 to 534.)

These pages contain, 1. The *Apparent* places, at Greenwich Mean Midnight, of the Fixed Stars to the sixth magnitude inclusive, the occultations of which will take place above the horizon at Greenwich.

2. The *Apparent* Places of those Planets and *all* Stars to the fifth magnitude inclusive, the occultations of which will be visible at *some* part of the Earth.

3. The Greenwich Mean Time at which the Moon would, if viewed from the centre of the Earth, appear to have the same Right Ascension as the Star.

4. The difference of Declination and Position of the Moon, as it would appear with respect to the Star at the instant of Conjunction in Right Ascension.

5. The Parallels of Latitude *beyond* which the Star cannot be occulted by the Moon.

These Elements are useful in the calculation of an Occultation, for being referable to the Moon and Star, as seen from the centre of the Earth, they are independent of geographical position, and serve equally for all places. It is only necessary to apply the difference of longitude from Greenwich to the Greenwich Mean Time of conjunction, to find the time of conjunction at any other meridian; and it is this time to which the positions of the Moon and Star here given will equally correspond.

Thus, the position of the Moon and κ Geminorum, on March 3, 1841, at $5^h\ 42^m\ 25^s$, Mean Time at Greenwich, is the position at $5^h\ 51^m\ 46^s{\cdot}5$ Mean Time at Paris, because Paris is $9^m\ 21^s{\cdot}5$ east of Greenwich.

By Limiting Parallels are to be understood those parallels of latitude beyond which an occultation cannot *possibly* occur.

Suppose an observer situate at a star, and having the Moon between him and the Earth, and that he could [illegible] oon projected on the Earth's disc; he would observe

the centre of the Sun, or $l' = 0$; 2nd, when it passes through the centre of the Earth, or $l = 0$, and at this time b also $= 0$; 3rd, when the Sun and Earth are on different sides of the plane of the Ring, for the Earth in this case will have the unilluminated side of the Ring turned towards it.

Phases. (Page 544.)

This page contains two Tables, the first showing the *Mean Time of the greatest Libration of the Moon's Apparent Disc;* and the second, the *Illuminated portion of the Discs of Venus and Mars* at the middle of each month.

Opposition of Mars. (Pages 545 to 549.)

These pages contain an Ephemeris of Stars proper to be observed with Mars about the time of the opposition in 1841, with a view to the determination of the parallax of that planet from corresponding observations of the differences of declination between the planet and stars made at places differing considerably in latitude, such as the observatories in the northern and southern hemispheres.

The stars are selected in such manner that there may be always sufficient intervals of time between their transits and those of the planet to enable the observer to read off the divisions of the Circle or Micrometer; except in some cases, when two objects, having nearly the same declination, will pass through the field, the telescope remaining fixed, and when their difference of declination may be obtained by means of a micrometer.

The apparent Geocentric position of Mars at his transit at Greenwich, will be found at pages 316 to 339.

When both limbs of Mars cannot be conveniently observed on the same day, the northern limb should be observed on the *odd* days, and the southern limb on the *even* days of the month.

α VIRGINIS should, when possible, be observed on every night when the planet is observed.

Those Astronomers who are possessed of good equatorial instruments may take repeated measures of the differences of declination between the selected stars and the planet on the same night, noting the times at which the observations are made.

The mean places of the stars have been taken from the following authorities:

λ, κ, ι, 82 and θ Virginis from Pond's Catalogue of 1112 Stars.

2 Libræ, 94, 96, and 76 Virginis from the Astronomical Society's Catalogue.

The Stars marked as follows from Bessel's Zone Observations; (*k*) and (*o*), from Zone 241; (*a*), (*b*), (*c*), (*d*), (*e*), (*f*), (*g*), and (*h*), from Zone 243; (*l*), and (*p*), from Zone 244; (*i*), (*m*), (*n*), (*q*), and (*r*), from Zones 241 and 244; and (*s*), and (*t*), from Zones 239, 241, and 244.

Tides. (Pages 550 to 553.)

The Mean Times of High Water at London Bridge are here given for every day of the year, on the assumption that the time of high water on full and change days, or the *Establishment of* [illegible] 7^m. The first high tide which happens

Example: On March 6, 1841, in Longitude 37° W. at $7^h\ 43^m\ 35^s$ Mean Time, suppose the altitude of the Pole Star, when corrected for the error of the instrument, refraction, and dip of the horizon, to be 46° 17′ 28″: Required the latitude.

	h	m	s
Mean Time - - - - - - -	7	43	35
Diff. Long. (37°) in time - -	2	28	0
Greenwich Mean Time - - -	10	11	35

	h	m	s
Sidereal Time at Greenwich Mean Noon -	22	56	11
Mean Time at Place - - - - - - - -	7	43	35
Acceleration (Tab. page 558) for $10^h\ 12^m$		1	41
Sidereal Time of Observation - - - -	6	41	27

	°	′	″
Corrected Altitude - - - - - - - - - -	46	17	28
Subtract - - - - - - - - -		1	0
Reduced Altitude - - - - - - - - - -	46	16	28
With *Argument* $6^h\ 41^m\ 27^s$, *First Correction*	− 0	8	36
Approximate Latitude - - - - - - - -	46	7	52
Arguments, 46° 16′, $6^h\ 41^m$ *Second Correction*		+1	16
Arguments, March 6, 1841, $6^h\ 41^m$ *Third Correction*		+1	31
Latitude of the place - - N.	46	10	39

which agrees with an actual trigonometrical computation.

The *Tables of Time Equivalents,* given at pages 558 to 561, are useful for converting Mean Time into Sidereal Time, and Sidereal into Mean Time, agreeably to the example annexed to each table. They will serve also for Tables of Acceleration and Retardation, by taking the difference between each argument and its equivalent. Thus, in the Table at pages 558 and 559, the *excess* of the sidereal time equivalents above the arguments of mean time show the *acceleration* of sidereal on mean solar intervals; and in the Table at pages 560 and 561, the *defect* of the mean time equivalents, as compared with the arguments of sidereal time, indicate the *retardation* of mean on sidereal intervals.

The concluding Table, at pages 562 to 566, contains the *Latitudes and Longitudes of the principal Observatories.* This Table has already been considerably improved, and will, it is hoped, be gradually perfected by communications from each astronomer, of the latest and most accurate determination of his geographical position.

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